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CURRENT LITERATURE.

BOOK REVIEWS.

Elementary text-books.

PROFESSOR Atkinson's *Lessons in Botany*[1] is announced as an abbreviated and simplified edition of the author's *Elementary Botany*, reviewed in this journal for December 1898. The design is to meet the requirements of those secondary schools, still far too numerous, in which not more than a half year is given to botany. The contents are clearly separated into three uses: "exercises for the pupils, demonstrations by the teacher, and descriptive matter for reading and reference." The book is more than a mere condensation of the larger one, for a large part of the matter has been rewritten, new illustrations have been introduced, and the whole presentation has a different constituency in view. As was said in the former review, Professor Atkinson is a very successful teacher and has had much experience with the schools, so that this book, as well as the other, should prove of large service in introducing into the secondary schools the truer views of botany which they so much need.—J. M. C.

AN author who writes from a university standpoint for the secondary schools has a difficult task. His own breadth of knowledge, and his relation to his fellow-workers invite to a broad, comprehensive, and up-to-date treatment of his subject. The secondary school, on the other hand, insists upon a work that is elementary in fact as well as in name.

The *Outlines of Plant Life*[2] is another expression of the desire on the part of teachers of botany to present the subject to the secondary schools in such a manner as to indicate in some measure the present condition of the science, and at the same time to give a usable book. Its appearance as an abridgement of *Plant Life* is a recognition of the fact that the present need of the secondary schools is a simpler and less comprehensive treatment of the subject. Almost a third of the original text, with the accompanying illustrations, has been cut out; some of the introductory portions have been rewritten, summaries added to each chapter, and appendix I (Directions for laboratory study) has been incorporated with the text as exercises. These changes certainly render the book much better adapted to the work of the secondary school. The rearrangement of the laboratory work is particularly commendable. The logical arrangement, clear treatment, and freshness of the larger book are retained in this volume. There is still left a heavy year's work for a good teacher and a strong class, and it is the judgment of the reviewer that further simplification might have been secured by the less minute treatment of some subjects, as the root, movement of plants, growth, and ecology, admirable as those subjects are in their present form. The many good points of the book will commend it to secondary teachers, whose class room experience alone can determine its fitness to survive.—I. N. MITCHELL, *State Normal School, Milwaukee, Wis.*

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[1] ATKINSON, GEORGE FRANCIS.—Lessons in botany. Small 8vo. pp. xv + 365, *figs. 277*. New York: Henry Holt & Co. 1900.

[2] BARNES, CHARLES REID. Outlines of plant life. Small 8vo. pp. vi + 308, *figs. 250*. New York: Henry Holt & Co. 1900.

The white pine.[3]

THE white pine has always commanded more than its share of study because of its economic importance. In so far as Professor Spalding and Dr. Fernow have succeeded in explaining the geographic and edaphic factors which control its distribution, they have made a valuable contribution to ecology and plant geography. The large number of acre-yield tables of measurements and explanations of soil and forest conditions enable them to draw certain definite and scientific conclusions regarding the causes of distribution.

The leading ecological factor is the nature of the soil and the water content of the same. While adapting itself to almost any variety of soil, the white pine prefers one with a fair admixture of sand, insuring a moderately rapid drainage. This is a soil intermediate between the stiff clayey soil on one hand, where the deciduous forest predominates, and the dry, light sandy, coarse and gravelly soil on the other hand, where the red pine (*Pinus resinosa*) and the jack pine (*Pinus Banksiana*) seem able to outdo it. The shallow root system of the white pine permits it to occupy the thinner soils of the rocky slopes in the Adirondacks and New England states.

Light is another important ecological factor. Compared with other pines the white pine has great shade endurance, hence its admixture with maples and beech, where it has an equal chance in open places. But white pine seedlings are never found in the dense shade of the hardwood forest; in such a place there is little hope for the white pine to gain a foothold. Owing to this inability of the white pine seedling to maintain itself in the dense shade, the hardwood forest is gradually encroaching upon it, except in soils too poor for the development of the deciduous forest.

A carefully prepared map of the geographic distribution offers a foundation for the discussion of the climatic factors governing such distribution.

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[3] SPALDING, V. M.: The white pine. Revised and enlarged by B. E. FERNOW. Contributions on insect enemies of the white pine by F. H. CHITTENDEN, and on the wood of the white pine by FILIBERT ROTH. Bulletin no. 22. U. S. Department of Agriculture, Division of Forestry. 4to. pp. 185. *pl.* —. 1899.